



# BioMap and Living Waters

## Guiding Land Conservation for Biodiversity in Massachusetts

### Core Habitats of Northampton

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is not intended for use in state regulations.

Produced by:  
**Natural Heritage & Endangered Species Program**  
**Massachusetts Division of Fisheries and Wildlife**  
**Executive Office of Environmental Affairs**  
**Commonwealth of Massachusetts**

Produced in 2004



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\* Depending on the location of Core Habitats, your city or town may not have all of these sections.

**Spring Salamander**  
(*Gyrinophilus porphyriticus*)  
Species of Special Concern



*Funding for this project was made available by the Executive Office of Environmental Affairs, contributions to the Natural Heritage & Endangered Species Fund, and through the State Wildlife Grants Program of the US Fish & Wildlife Service.*



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### Introduction

In this report, the Natural Heritage & Endangered Species Program provides you with site-specific biodiversity information for your area. Protecting our biodiversity today will help ensure the full variety of species and natural communities that comprise our native flora and fauna will persist for generations to come.

The information in this report is the result of two statewide biodiversity conservation planning projects, **BioMap** and **Living Waters**. The goal of the BioMap project, completed in 2001, was to identify and delineate the most important areas for the long-term viability of terrestrial, wetland, and estuarine elements of biodiversity in Massachusetts. The goal of the Living Waters project, completed in 2003, was to identify and delineate the rivers, streams, lakes, and ponds that are important for freshwater biodiversity in the Commonwealth. These two conservation plans are based on documented observations of rare species, natural communities, and exemplary habitats.

### What is a Core Habitat?

Both BioMap and Living Waters delineate **Core Habitats** that identify the most critical sites for biodiversity conservation across the state. Core Habitats represent habitat for the state's most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. Core Habitats represent a wide diversity of rare species and natural communities (see Table 1), and these areas are also thought to contain virtually all of the other described species in Massachusetts. Statewide, BioMap Core Habitats encompass 1,380,000 acres of uplands and wetlands, and Living Waters identifies 429 Core Habitats in rivers, streams, lakes, and ponds.



### Core Habitats and Land Conservation

One of the most effective ways to protect biodiversity for future generations is to protect Core Habitats from adverse human impacts through land conservation. For Living Waters Core Habitats, protection efforts should focus on the **riparian areas**, the areas of land adjacent to water bodies. A naturally vegetated buffer that extends 330 feet (100 meters) from the water's edge helps to maintain cooler water temperature and to maintain the nutrients, energy, and natural flow of water needed by freshwater species.

### In Support of Core Habitats

To further ensure the protection of Core Habitats and Massachusetts' biodiversity in the long-term, the BioMap and Living Waters projects identify two additional areas that help support Core Habitats.

In BioMap, areas shown as **Supporting Natural Landscape** provide buffers around the Core Habitats, connectivity between Core Habitats, sufficient space for ecosystems to function, and contiguous undeveloped habitat for common species. Supporting Natural Landscape was



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generated using a Geographic Information Systems (GIS) model, and its exact boundaries are less important than the general areas that it identifies. Supporting Natural Landscape represents potential land protection priorities once Core Habitat protection has been addressed.

In Living Waters, *Critical Supporting Watersheds* highlight the immediate portion of the watershed that sustains, or possibly degrades, each freshwater Core Habitat. These areas were also identified using a GIS model. Critical Supporting Watersheds represent developed and undeveloped lands, and can be quite large. Critical Supporting Watersheds can be helpful in land-use planning, and while they are not shown on these maps, they can be viewed in the Living Waters report or downloaded from [www.mass.gov/mgis](http://www.mass.gov/mgis).

## Understanding Core Habitat Species, Community, and Habitat Lists

### What's in the List?

Included in this report is a list of the species, natural communities, and/or aquatic habitats for each Core Habitat in your city or town. The lists are organized by Core Habitat number.

For the larger Core Habitats that span more than one town, the species and community lists refer to the entire Core Habitat, not just the portion that falls within your city or town. For a list of all the state-listed rare species within your city or town's boundary, whether or not they are in Core Habitat, please see the town rare species lists available at [www.nhesp.org](http://www.nhesp.org).

The list of species and communities within a Core Habitat contains only the species and

**Table 1.** The number of rare species and types of natural communities explicitly included in the BioMap and Living Waters conservation plans, relative to the total number of native species statewide.

BioMap		
Biodiversity Group	Species and Verified Natural Community Types	
	Included in BioMap	Total Statewide
Vascular Plants	246	1,538
Birds	21	221 breeding species
Reptiles	11	25
Amphibians	6	21
Mammals	4	85
Moths and Butterflies	52	An estimated 2,500 to 3,000
Damselflies and Dragonflies	25	An estimated 165
Beetles	10	An estimated 2,500 to 4,000
Natural Communities	92	> 105 community types
Living Waters		
Biodiversity Group	Species	
	Included in Living Waters	Total Statewide
Aquatic Vascular Plants	23	114
Fishes	11	57
Mussels	7	12
Aquatic Invertebrates	23	An estimated > 2500

natural communities that were explicitly included in a given BioMap or Living Waters Core Habitat. Other rare species or examples of other natural communities may fall within the Core Habitat, but for various reasons are not included in the list. For instance, there are a few rare species that are omitted from the list or summary because of their particular sensitivity to the threat of collection. Likewise, the content of many very small Core Habitats are not described in this report or list, often because they contain a single location of a rare plant



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species. Some Core Habitats were created for suites of common species, such as forest birds, which are particularly threatened by habitat fragmentation. In these cases, the individual common species are not listed.

### What does 'Status' mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act, M.G.L. c.131A, and its implementing regulations, 321 CMR 10.00. Rare species are categorized as Endangered, Threatened, or of Special Concern according to the following:

- **Endangered** species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- **Threatened** species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- **Special Concern** species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition, the Natural Heritage & Endangered Species Program maintains an unofficial **watch list** of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated any laws or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural

### Legal Protection of Biodiversity

BioMap and Living Waters present a powerful vision of what Massachusetts would look like with full protection of the land that supports most of our biodiversity. To create this vision, some populations of state-listed rare species were deemed more likely to survive over the long-term than others.

Regardless of their potential viability, all sites of state-listed species have full legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.37 and 10.59). The **Massachusetts Natural Heritage Atlas** shows **Priority Habitats**, which are used for regulation under the Massachusetts Endangered Species Act and Massachusetts Environmental Policy Act (M.G.L. c.30) and **Estimated Habitats**, which are used for regulation of rare wildlife habitat under the Wetlands Protection Act. For more information on rare species regulations, see the *Massachusetts Natural Heritage Atlas*, available from the Natural Heritage & Endangered Species Program in book and CD formats.

BioMap and Living Waters are conservation planning tools and do not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the combined BioMap and Living Waters vision is fully realized, we must continue to protect all populations of our state-listed species and their habitats through environmental regulation.

communities reflects the documented number and acreages of each community type in the state:

- **Critically Imperiled** communities typically have 5 or fewer documented sites or have very few remaining acres in the state.
- **Imperiled** communities typically have 6-20 sites or few remaining acres in the state.
- **Vulnerable** communities typically have 21-100 sites or limited acreage across the state.
- **Secure** communities typically have over 100 sites or abundant acreage across the state; however excellent examples are identified as Core Habitat to ensure continued protection.



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### Understanding Core Habitat Summaries

Following the BioMap and Living Waters Core Habitat species and community lists, there is a descriptive summary of each Core Habitat that occurs in your city or town. This summary highlights some of the outstanding characteristics of each Core Habitat, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific *fact sheets* at [www.nhesp.org](http://www.nhesp.org).

### Next Steps

BioMap and Living Waters were created in part to help cities and towns prioritize their land protection efforts. While there are many reasons to conserve land – drinking water protection, recreation, agriculture, aesthetics, and others – BioMap and Living Waters Core Habitats are especially helpful to municipalities seeking to protect the rare species, natural communities, and overall biodiversity within their boundaries. Please use this report and map along with the rare species and community fact sheets to appreciate and understand the biological treasures in your city or town.

### Protecting Larger Core Habitats

Core Habitats vary considerably in size. For example, the average BioMap Core Habitat is 800 acres, but Core Habitats can range from less than 10 acres to greater than 100,000 acres. These larger areas reflect the amount of land needed by some animal species for breeding, feeding, nesting, overwintering, and long-term survival. Protecting areas of this size can be

very challenging, and requires developing partnerships with neighboring towns.

Prioritizing the protection of certain areas within larger Core Habitats can be accomplished through further consultation with Natural Heritage Program biologists, and through additional field research to identify the most important areas of the Core Habitat.

### Additional Information

If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program:

*by Phone* 508-792-7270, Ext. 200

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*by Email:* [natural.heritage@state.ma.us](mailto:natural.heritage@state.ma.us).

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The GIS datalayers of BioMap and Living Waters Core Habitats are available for download from MassGIS: [www.mass.gov/mgis](http://www.mass.gov/mgis)

Check out [www.nhesp.org](http://www.nhesp.org) for information on:

- Rare species in your town
- Rare species fact sheets
- BioMap and Living Waters projects
- Natural Heritage publications, including:
  - \* Field guides
  - \* Natural Heritage Atlas, and more!



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# BioMap: Species and Natural Communities

## Northampton

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### Core Habitat BM734

#### Plants

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Bush's Sedge	<i>Carex bushii</i>	Endangered

#### Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Four-toed Salamander	<i>Hemidactylium scutatum</i>	Special Concern
Spotted Turtle	<i>Clemmys guttata</i>	Special Concern

### Core Habitat BM737

#### Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Elderberry Long-Horned Beetle	<i>Desmocerus palliatus</i>	Special Concern
Spatterdock Darner	<i>Aeshna mutata</i>	Special Concern

#### Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
American Bittern	<i>Botaurus lentiginosus</i>	Endangered
Four-toed Salamander	<i>Hemidactylium scutatum</i>	Special Concern
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	Special Concern
Spotted Turtle	<i>Clemmys guttata</i>	Special Concern
Spring Salamander	<i>Gyrinophilus porphyriticus</i>	Special Concern
Wood Turtle	<i>Clemmys insculpta</i>	Special Concern

### Core Habitat BM740

#### Natural Communities

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Black Gum-Pin Oak-Swamp White Oak "Perched" Swamp		Imperiled
High-Terrace Floodplain Forest		Imperiled



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# BioMap: Species and Natural Communities

## Northampton

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Low-Energy Riverbank

Secure

Major-River Floodplain Forest

Imperiled

### Plants

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Adder's-Tongue Fern	<i>Ophioglossum pusillum</i>	Threatened
Climbing Fern	<i>Lygodium palmatum</i>	Special Concern
Green Dragon	<i>Arisaema dracontium</i>	Threatened
Narrow-Leaved Spring Beauty	<i>Claytonia virginica</i>	Endangered
Sandbar Willow	<i>Salix exigua</i>	Threatened

### Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Arrow Clubtail	<i>Stylurus spiniceps</i>	Threatened
Brook Snaketail	<i>Ophiogomphus aspersus</i>	Special Concern
Riverine Clubtail	<i>Stylurus amnicola</i>	Endangered
Sensitive Rare Invertebrate		
Zebra Clubtail	<i>Stylurus scudleri</i>	Endangered

### Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Endangered
Four-toed Salamander	<i>Hemidactylium scutatum</i>	Special Concern
Spotted Turtle	<i>Clemmys guttata</i>	Special Concern
Wood Turtle	<i>Clemmys insculpta</i>	Special Concern

### Core Habitat BM741

### Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	Special Concern



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# BioMap: Species and Natural Communities

## Northampton

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### Core Habitat BM755

#### Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Sensitive Rare Invertebrate		
Twelve-Spotted Tiger Beetle	<i>Cicindela duodecimguttata</i>	Special Concern

#### Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Endangered

### Core Habitat BM758

#### Plants

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Low Bindweed	<i>Calystegia spithamea</i>	Endangered

#### Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	Special Concern

### Core Habitat BM782

#### Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Spatterdock Darner	<i>Aeshna mutata</i>	Special Concern

### Core Habitat BM789

#### Natural Communities

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
High-Terrace Floodplain Forest		Imperiled
Small-River Floodplain Forest		Imperiled
Transitional Floodplain Forest		Imperiled



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# BioMap: Species and Natural Communities

## Northampton

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### Plants

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Green Dragon	<i>Arisaema dracontium</i>	Threatened
Many-Fruited False-Loosestrife	<i>Ludwigia polycarpa</i>	Endangered

### Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Brook Snaketail	<i>Ophiogomphus aspersus</i>	Special Concern
Elderberry Long-Horned Beetle	<i>Desmocerus palliatus</i>	Special Concern
Zebra Clubtail	<i>Stylurus scudderi</i>	Endangered

### Vertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Endangered
Bird Migration Habitat		-----
Eastern Box Turtle	<i>Terrapene carolina</i>	Special Concern
Grassland Bird Habitat		-----
Spotted Turtle	<i>Clemmys guttata</i>	Special Concern
Wood Turtle	<i>Clemmys insculpta</i>	Special Concern

### Core Habitat BM800

#### Plants

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Small Site for Rare Plant		



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# BioMap: Core Habitat Summaries

## Northampton

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### Core Habitat BM734

The wetlands, meadows, and forests in this Core Habitat support Four-toed Salamanders and Spotted Turtles, as well as the Endangered Bush's Sedge. The central part of this Core Habitat is protected as the Fitzgerald Lake Conservation Area, but the outer areas appear unprotected.

#### Plants

One of only four known Massachusetts occurrences of Bush's Sedge, an Endangered plant, is found in a wet meadow within this Core Habitat.

#### Vertebrates

This Core Habitat encompasses a roadless area of mixed forest, forested and scrub-shrub wetlands, and small meadows along four miles of the headwater tributaries of Broad Brook in Northampton. Collectively these habitats support a population of Spotted Turtles. Four-toed Salamanders occur here in small forested pools and seeps with abundant sphagnum moss.

### Core Habitat BM737

This Core Habitat encompasses a variety of habitats along Roberts Meadow and Brewer Brooks that support rare invertebrates such as the Spatterdock Darner dragonfly, and several rare species of salamanders, reptiles, and birds. Small portions of this area are protected as conservation land.

#### Invertebrates

This Core Habitat includes Hanging Mountain Pond and nearby meadows and wetlands that provide habitat for both the Spatterdock Darner dragonfly and the Elderberry Longhorned Beetle. This Core Habitat is located close enough to Core Habitats in Williamsburg and Northampton, allowing occasional dispersal between these areas. While a portion of this Core Habitat is on municipal watershed land, the majority appears to be unprotected. Conservation of the remaining areas of unprotected land within this Core Habitat is desirable to increase the amount of contiguous protected habitat and to help ensure the long-term viability of rare species inhabiting the area.

#### Vertebrates

This Core Habitat comprises mixed forest, shrub swamps, and wet meadows along Roberts Meadow and Brewer Brooks. These connected riparian habitats support populations of Jefferson, Four-toed, and Spring Salamanders, as well as Spotted and Wood Turtles. Shallow freshwater marshes and wet meadows also provide habitat for the American Bittern, a rare species of marsh bird.



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# BioMap: Core Habitat Summaries

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### Core Habitat BM740

This Core Habitat is an important area for several rare plants and animals. It encompasses riparian habitats along portions of the Connecticut River, the Fort River, and Hop Brook, including extensive forested wetlands and small wet meadows in Lawrence Swamp. These areas support a diversity of rare dragonflies and plants, as well as Wood Turtles, Spotted Turtles, Four-toed Salamanders, and Bald Eagles. The Core Habitat also contains unusual wetland communities, including one that is specific to this part of the state. While some parts of this Core Habitat are protected, many riparian habitats appear to be unprotected.

#### Natural Communities

This Core Habitat contains large examples of both Major-River Floodplain Forest and Black Gum-Pin Oak-Swamp White Oak "Perched" Swamp natural communities. Major-River Floodplain Forests are dominated by Silver Maple. This community type is found along the floodplains of large rivers. The soils are enriched with nutrients brought by annual floods, resulting in a diversity of plants and insects. This floodplain forest is well-developed, with only a few exotic invasive plant species restricted to small sections where disturbances such as trails exist. This is the second-best known Major-River Floodplain Forest included on the BioMap. Meanwhile, Black Gum-Pin Oak-Swamp White Oak "Perched" Swamps are an unusual type of wetland found in Massachusetts in one area of the Connecticut River Valley. This community type is dominated by Red Maple, with Black Gum, Pin Oak, and Swamp White Oak.

#### Plants

Nine rare plant populations are found growing in different parts of this large Core Habitat. Several populations of the Climbing Fern, a plant Species of Special Concern, are found in swampy areas, while one population of the Threatened Green Dragon grows along a river floodplain. Other rare plant species found here are the Narrow-Leaved Spring Beauty (Endangered) and the Sandbar Willow (Threatened).

#### Invertebrates

In its westernmost portion, this Core Habitat includes a 5-km stretch of the Connecticut River and surrounding uplands in Northampton and Hadley that are critical habitat for rare dragonfly species, including the Endangered Riverine Clubtail dragonfly, the Threatened Arrow Clubtail dragonfly, and the Brook Snaketail dragonfly, a Species of Special Concern. Some portions of the shoreline habitat are within the protected areas such as the Rainbow Beach and Sheperds Island Conservation Areas and the Connecticut River Greenway and Skinner State Park. Pollution and hydrologic alterations originating upstream, downstream, or within this Core Habitat are major threats to the rare species inhabiting the area.



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# BioMap: Core Habitat Summaries

## Northampton

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### Vertebrates

The diverse riparian and wetland habitats within this Core Habitat support significant populations of Wood Turtles, Spotted Turtles, and Four-toed Salamanders. Wood Turtles may use over 13 connected miles of the Fort River and Hop Brook and associated wetlands, and range out 600 yards into forested and agricultural uplands. Lawrence Swamp is a large complex of forested and shrub wetlands, small wet meadows, and vernal pools that supports a significant population of Spotted Turtles. Four-toed Salamanders occur in pools and seeps where sphagnum moss is abundant. Conservation efforts should seek to maximize the width and extent of undeveloped riparian corridors along the Fort River and Hop Brook to ensure that the habitat quality of this Core Habitat does not get further degraded by roads and suburban development.

This Core Habitat also encompasses partially wooded shorelines and islands along a portion of the Connecticut River in Northampton. These areas provide relatively undisturbed perching habitat for wintering and non-breeding Bald Eagles that forage along the river, as well possible future nest sites for this species.

### Core Habitat BM741

#### Vertebrates

This Core Habitat comprises upland forest and vernal pools that support a population of Jefferson Salamanders. Although this is a relatively small area bordered by major highways and development, the multiple vernal pools that are present likely serve as breeding habitat.

### Core Habitat BM755

#### Invertebrates

This Core Habitat includes Elwell Island and a short stretch of the west bank of the Connecticut River that provide habitat for rare species of tiger beetles, including the Twelve-spotted Tiger Beetle. All of this Core Habitat is within the J. Elwell Conservation Area. Nevertheless, hydrologic alteration and pollution originating upstream, downstream, or within this Core Habitat are major threats to the rare species inhabiting the area.

#### Vertebrates

This Core Habitat encompasses nearly one-half mile of partially forested shoreline along the western end of Elwell Island in the Connecticut River in Northampton. This shoreline and the river itself provide perching and foraging habitat for wintering and non-breeding Bald Eagles.

### Core Habitat BM758

#### Vertebrates

This Core Habitat includes vernal pools and small forested wetlands in a matrix of upland forest along the east side of the Sawmill Hills in Northampton. Collectively, these habitats support a population of Jefferson Salamanders.



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# BioMap: Core Habitat Summaries

## Northampton

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### Core Habitat BM782

#### Invertebrates

This Core Habitat includes a small pond and adjacent swamp that are habitat for the Spatterdock Darner dragonfly. Although surrounded by development, this Core Habitat is itself unfragmented and located about 5 km from Core Habitat for this species in Westhampton, which may allow for occasional dispersal of Spatterdock Darners between these two locations. Other than two small tracts of municipal watershed land, almost all of this Core Habitat appears to be unprotected.

### Core Habitat BM789

This Core Habitat encompasses riparian areas along the Manhan River and several of its tributaries. It includes fields, wet meadows, shallow marshes, shrub and forested wetlands, and a large oxbow along the west side of the Connecticut River. This diverse area contains habitats for three species of state-protected rare turtles, as well as Bald Eagles. It supports rare insects like the Endangered Zebra Clubtail dragonfly, and rare plants such as the Endangered Many-Fruited False-Loosestrife. The Core Habitat encompasses several floodplain forest communities, including an unusually high-quality Small-River Floodplain Forest. Parts of this Core Habitat are already protected as conservation land, including MassAudubon's Arcadia Wildlife Sanctuary, and further protection of key areas is needed.

#### Natural Communities

This Core Habitat contains a diversity of Floodplain Forest communities of varied quality. The Small-River Floodplain Forest within this Core Habitat is one of only three high-quality known locations of this community type in the state. Small-River Floodplain Forests are Silver Maple-Green Ash forests occurring on alluvial soils of small rivers and streams. This rare type of forest is often heavily impacted by hydrology alterations and is usually associated with a suite of invasive exotic species; however, this occurrence has remained in excellent condition and is disturbance free. The Transitional Floodplain and High-Terrace Floodplain Forests here are also important occurrences of these uncommon community types, especially because of their proximity to each other.

#### Plants

Two populations of the very rare Many-Fruited False-Loosestrife grow on exposed mud and depressions within floodplains along the Connecticut River. The Threatened Green Dragon, a relative of Jack-in-the-Pulpit, is also growing in floodplain habitat along the Connecticut.

#### Invertebrates

The Manhan River and its tributaries within this Core Habitat provide important habitat for rare dragonflies including the Endangered Zebra Clubtail and the Brook Snaketail. In addition, wet meadows and shrub swamps with Elderberry located at various points along this stretch of the Manhan River provide habitat for the Elderberry Longhorned Beetle. Portions of the Manhan River flow through extensive areas of developed and agricultural land, which threatens the river and its rare species inhabitants with hydrologic alteration and pollution.



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### Vertebrates

The extensive, connected areas of habitat that border the Manhan River and its tributaries provide significant habitat for Wood Turtles. Documented observations indicate that Spotted Turtles and Eastern Box Turtles are present here as well. A number of nearby roads, including Rte. 10, have likely adversely affected populations of these turtles through road mortality. This Core Habitat should be a priority for conservation planning for Wood Turtles.

The section of the Connecticut River and its forested shorelines within this Core Habitat provide relatively undisturbed foraging and perching habitat for wintering and non-breeding Bald Eagles. Protection and management of wet meadows and shallow marshes near the west side of the Connecticut River can benefit a variety of birds, including rails, bitterns, and certain species of waterfowl and shorebirds. Managed grasslands at Arcadia Sanctuary provide habitat for grassland birds. The diverse habitats within this Core Habitat provide important migration habitat for a number of bird species.



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# Living Waters: Species and Habitats

## Northampton

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### Core Habitat LW354

#### Exemplary Habitats

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Invertebrate Habitat		-----

#### Plants

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
American Waterwort	<i>Elatine americana</i>	Endangered
Water Star-grass	<i>Heteranthera dubia</i>	Watch Listed

#### Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Brook Floater	<i>Alasmidonta varicosa</i>	Endangered
Creeper	<i>Strophitus undulatus</i>	Special Concern
Eastern Pondmussel	<i>Ligumia nasuta</i>	Special Concern
Triangle Floater	<i>Alasmidonta undulata</i>	Special Concern
Yellow Lampmussel	<i>Lampsilis cariosa</i>	Endangered

#### Fishes

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Burbot	<i>Lota lota</i>	Special Concern
Eastern Silvery Minnow	<i>Hybognathus regius</i>	Special Concern
Shortnose Sturgeon	<i>Acipenser brevirostrum</i>	Endangered

### Core Habitat LW425

#### Exemplary Habitats

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Invertebrate Habitat		-----



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# Living Waters: Species and Habitats

## Northampton

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### Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Creeper	<i>Strophitus undulatus</i>	Special Concern
Dwarf Wedgemussel	<i>Alasmidonta heterodon</i>	Endangered
Eastern Lampmussel	<i>Lampsilis radiata</i>	-----
Eastern Pearlshell	<i>Margaritifera margaritifera</i>	-----
Eastern Pondmussel	<i>Ligumia nasuta</i>	Special Concern
Triangle Floater	<i>Alasmidonta undulata</i>	Special Concern

### Core Habitat LW427

#### Exemplary Habitats

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Invertebrate Habitat		-----

### Invertebrates

<u>Common Name</u>	<u>Scientific Name</u>	<u>Status</u>
Creeper	<i>Strophitus undulatus</i>	Special Concern
Dwarf Wedgemussel	<i>Alasmidonta heterodon</i>	Endangered
Eastern Lampmussel	<i>Lampsilis radiata</i>	-----
Eastern Pearlshell	<i>Margaritifera margaritifera</i>	-----
Eastern Pondmussel	<i>Ligumia nasuta</i>	Special Concern
Triangle Floater	<i>Alasmidonta undulata</i>	Special Concern



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# Living Waters: Core Habitat Summaries

## Northampton

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### Core Habitat LW354

This middle section of the Connecticut River flows through a mix of developed, agricultural, and forested lands, and is bounded by the Holyoke dam to the south, and the Tuners Falls dam to the north. The river provides unparalleled freshwater habitats for fishes and invertebrates in Massachusetts.

The river is of conservation significance because it supports the only known occurrence of the Endangered Yellow Lampmussel in Massachusetts. This freshwater mussel lives in large rivers, and was recently rediscovered in the mainstem of the Connecticut River at depths of up to fifteen feet. In the past, the Connecticut River was known to support eleven mussel species, and today there are nine species known from the river.

The Bachelor Brook tributary in Granby and South Hadley also supports a very diverse assemblage of freshwater mussels, including eight of the twelve species found in Massachusetts. Four of these species are state-listed as rare: the Endangered Brook Floater, the Triangle Floater, the Eastern Pondmussel, and the Creeper mussel. These species have generally been found in moderate to slow flowing stretches of the brook below rocky riffles in either mixed sand and gravel runs or in sandy pools. The Brook Floater in particular is believed to be sensitive to low oxygen, pollution, and silt, and is known from only five water bodies in the state. There is some evidence that this small Brook Floater population is reproducing, making this a particularly important site.

Stony Brook in South Hadley supports five freshwater mussel species, including the rare Creeper mussel. This species is found scattered along the lower reach of Stony Brook, near the confluence with the Connecticut River, as it flows slowly over loose sands, gravels, and clays. There are only nineteen Core Habitats for the Creeper, which represent the water bodies that support the most robust populations of this rare mussel across the state.

From Holyoke northward, the Connecticut River mainstem is also home to ten species of state-listed dragonflies, the majority of which are found only in large rivers. The tributaries of the Connecticut River are important habitat for the state-listed dragonflies found in smaller rivers. The Connecticut River and the Connecticut River Valley provide a northward corridor for more southerly species, thus contributing a unique fauna to Massachusetts.

In addition to invertebrate habitats, the Connecticut River supports a diversity of fish habitats. The stretch of the Connecticut River in Montague is an important spawning (breeding) area for the state- and federally-Endangered Shortnose Sturgeon. This long-lived, prehistoric-looking fish is particularly susceptible to habitat degradation and mortality because it does not reach maturity until it is at least 5 - 10 years old. The Shortnose Sturgeon moves many miles during its life cycle, using other parts of the Connecticut River at different times of the year. The stretch of the river from Montague and Deerfield down to Hatfield and Hadley is important feeding and overwintering habitat.

In Hatfield, Hadley, and Northampton, a portion of the Connecticut River and its associated tributaries were delineated as Core Habitat for the Eastern Silvery Minnow, a fish Species of Special Concern. This species is only known from the Connecticut River and lower Deerfield



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# Living Waters: Core Habitat Summaries

## Northampton

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River in Massachusetts. It spawns in backwaters, laying eggs directly on the river bottom in areas where the emergent vegetation provides cover. Siltation, pollution, and water level changes threaten this species.

The stretch of the Connecticut River in Gill, Greenfield, and Montague downstream from the Turners Falls Dam is presumed habitat for Burbot, a fish Species of Special Concern. Burbot also likely inhabits the Connecticut River in the vicinity of the Fort River confluence in Hadley. This enigmatic fish, a freshwater member of the cod family, has been found at only a few locations in Massachusetts. Not much is known about its life history in the state, although it may live mostly in deep pools of the Connecticut River.

Shallow areas in the Connecticut River north of the Sunderland bridge support a population of the diminutive American Waterwort, an Endangered aquatic plant. This area also supports the uncommon Water Star-Grass, a plant with tiny yellow flowers and long grass-like leaves. Native freshwater plants like these species are an important component of aquatic ecosystems. They provide habitat and nutrition for fish and invertebrates, and they add oxygen to the water through photosynthesis. Permanent protection of the riparian land adjacent to this Core Habitat, and careful management of runoff from developed and agricultural areas will help ensure the continued quality of this key Core Habitat in Massachusetts.

### Core Habitat LW425

The Mill River in Whately and Hatfield is considered to be the top conservation priority for freshwater mussels in Massachusetts. The river supports the most diverse assemblage of mussels known in the state, including a viable population of the state- and federally-Endangered Dwarf Wedgemussel. Also among the nine mussel species found here, are the rare Triangle Floater, the Eastern Pondmussel, and the Creeper mussel. The river habitat is unique because below the falls near route 116 in Deerfield, the gradient of the Mill River flattens and the river slowly flows across the old lakebed of former Glacial Lake Hitchcock. Here the riverbed is made up of softer sands, silts, and clays, which allow mussels to successfully get a foothold in the bottom sediments. Robust populations of many of these mussel species, along with clear evidence of reproduction, further attest to the importance of this site for freshwater mussel biodiversity.

Tributaries to the Mill River, Running Gutter and Broad Brooks also support diverse communities of freshwater mussels, including the state- and federally-Endangered Dwarf Wedgemussel, and the uncommon Eastern Pearlshell mussel. Both of these species are found in the low gradient stretches of Running Gutter Brook in patches of sand and silt. The beaver dams in this brook likely benefit mussels. Beaver dams slow water flow and trap sediments, which allow mussels to get a foothold in an otherwise quick flowing environment.

This Core Habitat also supports rare dragonflies. These aquatic insects are good indicators of ecosystem health, confirming that this Core Habitat contains high-quality freshwater habitats for aquatic species.

### Core Habitat LW427

This Core Habitat encompasses the Manhan River, the Mill River Diversion, and Oxbow Pond,

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# Living Waters: Core Habitat Summaries

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all of which provide important habitat for fishes and rare invertebrates.

The sandy substrate and clay banks found in the short stretch of the Mill River known as the "Mill River Diversion" support one of the most diverse communities of freshwater mussels in the state. Eight of the twelve species that occur in Massachusetts are found here, four of which are state-listed as rare: the federally-Endangered Dwarf Wedgemussel, the Triangle Floater, the Eastern Pondmussel, and the Creeper mussel. Due to the limited habitat availability in the Mill River Diversion all of these mussel populations are particularly subject to extirpation from a catastrophic event, such as an oil spill or water diversion, and thus warrant special conservation attention.

The sandy riverbed of the meandering Manhan River provides important habitat for seven of the state's twelve freshwater mussel species, including the rare Triangle Floater, Creeper, and Eastern Pondmussel. Two reaches of the Manhan River in Southampton are especially productive for mussels, supporting robust and successfully reproducing populations of the Triangle Floater and the Creeper mussel. The Eastern Pondmussel is found in the mouth of the Manhan River below the lowest dam in the finer sands and silts.

This Core Habitat also provides habitat for rare dragonflies. These aquatic insects are good indicators of ecosystem health, confirming that this Core Habitat contains high-quality freshwater habitats for other aquatic species as well. For example, Oxbow Pond is a particularly productive site for fishes, supporting a diversity of warmwater species.



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